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PROCEEDING

INTERNATIONAL CONFERENCE
ON STATISTICS, MATHEMATICS,
TEACHING, AND RESEARCH

ICSMTR 2015

*Increasing Statistical and Mathematical Literacy through
High Quality Teaching and Research*

October 9-10, 2015

Makassar, South Sulawesi, Indonesia

STATISTICS DEPARTMENT AND MATHEMATICS DEPARTMENT
STATE UNIVERSITY OF MAKASSAR
INDONESIA

CONFERENCE PROCEEDING

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**Statistics Department and Mathematics
Department
Faculty of Mathematics and Natural Sciences
State University of Makassar
Indonesia**

**ICSMTR 2015: INCREASING STATISTICAL AND MATHEMATICAL
LITERACY THROUGH HIGH QUALITY TEACHING
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WELCOME SPEECH

Forewords from the Head of Committee

Bismillahirrahmanirrahim

Assalamu'alaikum Warahmatullahi Wabarakatuh

First, I want to give our welcome to all the delegates, speakers, and participants coming today. Welcome to the State University of Makassar, UNM.

This International Conference on Statistics, Mathematics, Teaching, and Research (ICSMTR) 2015 is primarily organized by Statistics Department and Mathematics Department, Faculty of Mathematics and Sciences, State University of Makassar. It is conducted in two days from 9th to 10th October 2015. It involves one keynote speaker, Governor of South Sulawesi, eight invited speakers, and approximately 80 parallel speakers. Besides, this conference also invites delegates from twelve LPTKs (Institute of Teacher Education) to conduct a scientific meeting reviewing KKNi for Mathematics Education curriculum in higher education.

Ladies and gentlemen, as I previously said, the conference proudly invites eight invited speakers coming from several countries. Therefore, on behalf of the committee members, I would like to express my sincere thanks to the invited speakers, specifically:

1. Professor Kerrie Mengersen (Queensland University of Technology, Australia)
2. Professor Shigehiko Kanaya (Nara Institute of Science and Technology, Japan)
3. Professor Ahmad A. Bahnassy (Faculty of Medicine, King Fahd Medical City, Saudi Arabia)
4. Professor I Gusti Ngurah Agung (State University of Makassar, Indonesia)
5. Professor Hamzah Upu (State University of Makassar, Indonesia)
6. Professor Muhammad Arif Tiro (State University of Makassar, Indonesia)
7. Professor Mohd. Salmi Md Noorani (Universiti Kebangsaan Malaysia, Malaysia)
8. Dr. Darfiana Nur (Flinders University, Australia)

Next, it is my privilege to thank all organizing committee members for their contributions to the success of this event. I would like also to apologize for all of you if there are some inconvenience during this conference.

Finally, I would like to thank to the speakers and participants. I wish you all have two fruitful days in Makassar.

Thank you very much for the attention.

Wassalamu'alaikum Warahmatullahi Wabarakatuh

Suwardi Annas, Ph.D.

Head of Committee



**Forewords from the Dean of Mathematics and Sciences Faculty,
State University of Makassar**

Bismillahirrahmanirrahim

Assalamu'alaikum Warahmatullahi Wabarakatuh

Alhamdulillah, all praises be to the Almighty God, Allah *subhanahu wata'ala*.

I would like to say that I welcome and highly appreciate any attempts of both the Statistics Department and Mathematics Department to organize this International Conference on Statistics, Mathematics, Teaching, and Research in the State University of Makassar. I do hope that this conference would be a great chance for you as researchers or scholars in enhancing your research quality within a framework of evolving sciences. May Allah *subhanahu wata'ala* opens our mind, widens our view, strengthens our soul, and blesses our conference that it will be useful as we are hoping.

At last, as the Dean of the Faculty of Mathematics and Natural Sciences, State University of Makassar (FMIPA UNM), I am sure that there are some weaknesses and mistakes in performing this conference. I therefore do apologize to you and may Allah *subhanahu wata'ala* forgive all of us.

Wassalamu'alaikum Warahmatullahi Wabarakatuh

Professor Abdul Rahman

Dean of Faculty of Mathematics and Sciences

State University of Makassar



Forewords from Rector of UNM

Bismillahirrahmanirrahim

Assalamu'alaikum Warahmatullahi Wabarakatuh

Your respectable, the high officials of State University of Makassar, the committee, the speakers, and the participants of conference.

It gives me great pleasure to extend to you all a very warm welcome, especially to our keynote speakers who have accepted our invitation to convene the conference. ICSMTR is one of our educational activities that covers a wide range of very interesting items relating to statistics, mathematics, teaching and research.

By taking participation of this conference, it is highly expected to all of us to share our research findings to society and continuously develop new ideas and knowledge. Those things are two significant steps in improving the quality of nations around the world, increasing our familiarity to each other, and even avoiding underdevelopment.

Furthermore, I would like to take this opportunity to express my heartfelt gratitude to all organizing committee especially for Statistics Department and Mathematics Department of Faculty Mathematics and Natural Sciences that primarily hosts this conference.

Finally, this is a great time for me to declare the official opening of the International Conference on Statistics, Mathematics, Teaching, and Research (ICSMTR) 2015.

I wish you a very enjoyable stay in Makassar

I warmly welcome you again, as in Makassar, we say "*salamakki battu ri mangkasara*"

Wassalamu'alaikum Warahmatullahi Wabarakatuh.

Prof. Dr. H. Arismunandar, M.Pd.

Rector of State University of Makassar



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IDENTIFICATION OF GAME MODEL FOR HEALTH EDUCATION IN PRESCHOOLERS

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ABSTRACT

Health education in preschoolers necessary to be involved with playing. As the development of technology, game play is one of popular in children. With this in mind, we thought developed game as a media for health education. Therefore, we need information regarding characteristics of game favored by children because the effectiveness of game is depends on first intention. This study used descriptive qualitative approach, involving seven children aged three to six years with parents as participants. Participants choosed purposively with inclusion criterias male and female, able to play games androidbased games and approval of parent. Data collected by recording interviews using an interview guide. Data analysis was performed with the stages of abstraction and interpretation of data. The results of this study, we found four themes of characteristic features an electronic game that endeared preschoolers: 1) characteristics of the game's main character, the creature moves, contains elements of fantasy, and have attractive appearance; 2) characteristics of the game model, which includes activities, adrenaline, has a gift (reward), the game is varied and has educational elements; 3) The bright colors are the primary and secondary colors; and 4) the character of the game, which is independent in playing games, playing about an hour a day, and the time of play most often at bedtime. Fourth this theme can be used as an input to develop games as a media for health education to preschoolers.

Keyword: Games, health education, preschoolers

1. INTRODUCTION

Early childhood is the period of formation of concepts and ideas that reasoned constant. Planting concept in this period will shape the mindset of children in the future. Therefore, early childhood education is intended for children of preschool age intended that the child can develop its potential early on so that they can develop naturally as a child.

Many early childhood learning through play activities. Along with the development of technology, the type of game that is much loved by children today is the game. In the United State, the duration of time spent by boys to play games an average of 13 hours / week while in girls as much as 5.5 hours / week (Gentile & Anderson, 2006). In Indonesia, the image of children playing games found more in boys than girls. They play on average for 1-2 hours per day with an average frequency of twice a week (Malahayati, 2012).



Game is an activity that helps children achieve full development, physical, intellectual, social, moral, and emotional (Andang, 2009). Play games provide a very effective exercise for the brain. Nowadays children have a large enough portion as users of digital technology and are predicted to increase significantly in the coming years. It is influenced by the ability of their excellent adaptation to technology. Then, in the trend of the all the technology today, there are many applications in the gadget educational games for children. Therefore, the game can also be used as a medium for health education. However, for effective game serve as media health education it is necessary to note the model games that appeal to children. This is because the effectiveness of the game in educating children begins with the child's interest prior to the game.

2. METHOD

This study used descriptive qualitative approach aimed to get the characteristics of the game favored by preschoolers. Qualitative research is descriptive research procedures that produce a description of the form of words or sentences written. This research was conducted in two schools; kindergarten (TK) Melati and Raudhatul RA (RA) Alauddin Makassar on December 23, 2014 until February 4, 2015. The structured interview guide used by researchers and validated by experts in early childhood.

The sample selection criteria are based on informants who can enrich the information that preschool children (3-6 years), is able to play the android-based game, made up of boys and girls and to get permission from a parent / guardian to become participants. Selection of participants is done by the staff of teachers based on criteria that researchers specify and are considered good in communicating by local teachers.

Data collection strategies used in this study is the face to face interviews and field notes when children play games. Tools interview using voice recorder from a cell phone to record the information of participants and interview guides. In addition, by using a pen and notepad to make field notes on observations of non-verbal responses of participants during game play. The data analysis was conducted by data abstraction through the coding process, creating themes / categories and write a memo and do the interpretation.

3. RESULT AND DISCUSSION

3.1 Participant Characteristics

Characteristics of participants child used as a source of information in this study is children aged three to six years old who likes to play games and all participants were interviewed children have their own gadgets at home. Comparison of the number of male participants and female almost flat. This is done in order to obtain information about the characteristics of the game favored by both groups of children based on gender. The majority of participants were children in this study is the only child and the youngest child. Participants majority of parents still are in the productive age with a lifespan of between 31-46 years. Parents of children participants all have a good level of education.



Table 1 Participant characteristics

Participant	Age	Sex	Num child	Sibling	Having Gadget	Father Age	Mother Age	Father Occupation	Mother Occupation	Father education	Mother Education
1	3	Female	1	1	Yes	35	31	Business	Civil servant	Bachelor	Master
2	6	Female	3	3	Yes	46	43	Business	Business	Bachelor	Bachelor
3	6	Male	3	3	Yes	45	43	Civil Servant	Civil servant	Master	Master
4	5	Female	1	1	Yes	38	37	Business	Banker	Bachelor	Bachelor
5	5	Female	1	1	Yes	45	25	Civil servant	Housewife	Master	Senior High School
6	6	Male	4	4	Yes	45	43	BUMN	Housewife	Bachelor	Senior High School
7	5	Male	1	2	Yes	33	32	Civil servant	Housewife	Bachelor	Bachelor

3.2 Thematic Analysis

Based on the four themes of the research objectives characteristic features an electronic game that endeared preschoolers. Various themes are:

1. Characteristics of the main character game

In this study, participants revealed the figure favored form of creature moves, contains elements of fantasy and have attractive appearance. The phrase was spoken by preschool children are still very simple and brief the appropriate questions. Therefore some expressions of participants will be accompanied by a series of questions researchers to look meant. Here are some expressions of the participants and the words underlined the key words:

"...kalo gambar, gambar apa "Ad" suka? gambar burung.....hello kitty...sama minie mouse" (P1)

"Ny suka main game apa? game Barbie" (P2)

"apa yang paling kita suka kalo kita main game? kereta api sama mobil" (P7)

"apa bagusnya itu bima? bisa berubah jadi robot" (P7)

"Apa bagusnya putri ya? ada mahkotanya.. baju sama binatang" (P4)

It delivered in line with the child's parents about the figures presented are favored. It can be seen from the following quote:

"dia juga suka mickey mouse, donal bebek" (IP1)

"yang sering dia mainkan, mm yang sering sekali ya? Barbie" (IP2)

"game kaya mobil-mobil...hmm yang kaya memacu adrenalin gitu" (IP7)

"game-game kaya kartun, frozen dan game-game gitu ataukah yang kaya king, candy-candy, dia senang yang nuansa-nuansa kartun gamenya" (IP5)

Participants revealed the creature moves that endeared tangible animal or animals, humans and transportation. Participants also revealed that the character that the groove which contains elements of fantasy that has the strength and nuanced cartoons. Another thing that endeared the main character is having an interesting game that can be seen on the graphical display of the main characters, have accessories and has a distinctive style.

1. Model characteristics game

Characteristics of child models favored game that includes activities, adrenaline, has a gift (reward), the game is varied and has educational elements. At subtema includes activities, acquired six categories of building a model game that is nurturing or caring activities, image or color matching, coloring, shooting, designing, and serve game (take an order). In the sub-theme of adrenalin there are three categories: hurdles, strategy and racing games. In the sub-theme has a gift (reward) favored by children in the form of a trophy, something new in the game and scores. In the sub-theme game varies, children seem bored easily and enjoys a varied game. In the sub-theme has educational elements built by category learn and mimic movements. Here are some expressions of the participants and the words are underlined as a key word:

"Apalagi kalau game dokter itu yang bayi-bayi....dia suka itu membersihkan bayinya, rata-rata di playstore dia download yang begitu-begitu" (IP5)

"biasanya ada game kafe-kafenya baru dikasih pesan-pesan.. dulu sama pelanggan baru dia mau yang mana seperti itu harus sama dengan warnanya baru dikasih sama pelanggan" (P4)

Hasil observasi pada anak P3 yakni anak membuka game dan memilih game temple run. Anak tampak memainkan game yang sama selama kurang lebih 10 menit, tampak anak berulang kali memainkan game tersebut tanpa memilih game yang lainnya hingga waktu kontrak bermain habis.

"dia mau cepat-cepat pergi ke piala. Kalau 9000 sudah bisa sudah sudah dapatmi piala" (P3)

"kalo di bilang paling sering ndak adaji mungkin, tapi suka ganti-ganti game.. tidak ada yang paling sering yang tiap hari itu terus dia mainkan tdk ada" (IP3)

"kalo upin ipin kan belajarnya, karena di gamenya itu ada memang saya liat untuk belajar bahasa inggris" (IP4)

2. Bright colors

Participants revealed that the characteristic color of the child's favored bright colors. Bright colors like the red, blue and yellow is a primary color groups, as well as green, orange, purple and pink are a class of secondary color. Here are some expressions of the participants and the words are underlined as a key word:

"Kalo warna, Rn suka warna apa? pink dengan ungu, dengan biru dengan merah" (P4)

"suka warna apa? merah, biru, dan hijau" (P7)

"Dia lebih suka warna terang...biru...orange mungkin dia suka yang terang-terang" (IP7)

3. User character game

Participants revealed the character of the old game users play games an average of one hour, the time to play games ahead of naps and night, and the child has been self-sufficient in playing the game. Here are some expressions of the participants and the words are underlined as a key word:



“kalo main tablet hampir tiap hari di waktu dia lagi baring-baring mau tidur jadi mungkin kurang lebih 1 jam paling lama mi dia maini itu main tablet” (IP3)

“dia itu main game obat tidur... obat tidur buat dia... tidur siang” (IP2)

“dia buka playstore dia liat-liat dia suka ini dia download itu nanti kan muncul aplikasi lain dia suka dia download lagi baru dia maini” (IP5)

a. Discussion

Characteristics of the main character who liked children are being moved, contains elements of fantasy and has an attractive appearance. Wong (2004) states that preschool children 3-5 years have the characteristics of the contents that are imaginative play with the type of game being played is fantasy and informal.

The same is stated by Nisa and Indrayana (2012) which identifies the characteristics of children aged 5-6 years for boardgame design needs. Psikografik characteristics of preschoolers are (1) likes asking questions and interested in something they do not know; (2) like active movement; (3) have a sense of curiosity and a high curiosity; (4) has a high power of imagination; (5) always wanted to be involved in something; (6) happy to interact with peers; (7) interested in new things; and (7) high creativity.

The same thing also expressed in the results of research aimed at identifying the needs of users for the design of educational media in early childhood. In the five standard criteria for the interest of children to an application: (1) boys and girls interact differently with multimedia applications; girls interested in the visual display, while the boys assessing control, speed and navigation; (2) The main character of the game exciting and favored child character is funny and cheerful; (3) the child like striking colors; (4) the challenge in the game is very important to arouse the curiosity of children and increase the interest of children to play; (5) words of praise and motivation is very important to motivate children; (6) forms of activity in the game should be varied to avoid boredom in children; and (7) Some children liked the music and sounds in the game (Delima, Arianti, & Pramudyawardani, 2015).

Something similar is found in this study in which the character that endeared preschoolers that is being moved can be either animals, humans (especially small children), as well as transportation. The main character is also favored that has an element of fantasy in which the main character is nuanced cartoons. However, the boy they add information that the main character who liked the power. The other thing that endeared the main character that has an attractive appearance either. This looks interesting from the aspect of costumes, accessories used and the manner typical style.

The subject matter is given wherever possible in the form of games and done with a fun activity. Activities that are usually performed include coloring, pierce, plumb, sticking, painting, reading, writing, arithmetic, make things simple creation of second-hand goods, outdoor activities, and the activities of the group. Games cognition that is usually given to preschool children include games arrange blocks, compose puzzle, arrange lego, playing with flash cards, and play in groups. This is similar to the results in this study that children love the game which includes the activities such as caring / nurturing, matching what color or image, shoot, design / design and serve.

Children preferred color is the primary color of red, yellow, and blue and the secondary colors: green, orange, purple and pink. Mintorogo, Adib and Suhartono (2014) states that toddlers prefer to learn through visually appealing, colorful, interactive and real objects, rather than just through textbooks and verbal learning.

Character game users average length of play for an hour, playing time before bed and the child had been independent in playing the game. This is in line with psychomotor ability of children to play games on children aged 3-5 years are preschooler have good motor skills and is able to distinguish the visual object that can be used to control devices such as the computer mouse and keyboard, but they can only focus on one hand and one aspect at the same time. Therefore, games for preschoolers should be made as simple as possible. In addition, the computer game by using the mouse can train fine motor skills in children and if given some time training, preschoolers can operate a mouse and computer keyboard well. They've been able to select the object, click, and drag-and-drop.

4. CONCLUSION

This study provides a description of the characteristics of an electronic game that endeared preschoolers through four main themes, namely characters, character models of the game, the child's favorite color, and character of the game. The main character of the game favored the moving creature, contains elements of fantasy and has an attractive appearance. Character models are favored child game is loading activity, adrenaline, has a gift (reward), the game is varied and contains elements edukatif. Warna child's favorite color is bright and sunny. If classified as dominant color favored children is of primary colors namely red, blue and yellow as well as secondary colors are green, orange, purple and pink.

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